

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (cancelled):

Claim 2 (cancelled):

Claim 3 (cancelled):

Claim 4 (cancelled):

Claim 5 (cancelled):

Claim 6 (cancelled):

Claim 7 (cancelled):

Claim 8 (cancelled):

Claim 9 (cancelled):

Claim 10 (cancelled):

Claim 11 (cancelled):

Claim 12 (currently amended): A reference electrode comprising:

    a polymeric reference electrode membrane comprising (a) one selected from a cellulose based porous polymer and a hydrophilic plasticizer and (b) a lipophilic polymer, wherein the hydrophilic plasticizer is selected from the group consisting of glycerol, polyethylene glycol, ethylene glycol monomethyl ether, ethylene glycol, formamide and a combination thereof;

    an inner reference electrode 3 positioned at the center within the reference electrode; and

    an inner reference electrolyte 7 filling the internal space of the reference electrode;

    wherein the polymeric reference electrode membrane 8 is mounted to an end of the electrode,

wherein the inner reference electrolyte 7 is a hydrogel obtained by dissolving 1-15 % by weight of a hydrophilic polymer in 0.01-3.0 M aqueous solution saturated with a salt selected from the group consisting of KCl, NaCl, KNO3 and NH4NO3, each of which is similar in mobility.

Claim 13 (original): The electrode as set forth in claim 12, wherein the polymeric reference electrode membrane 8 comprises a porous polymer and a lipophilic polymer, and the inner reference electrode 3 is made of silver/silver chloride.

Claim 14 (original): The electrode as set forth in claim 12, wherein the polymeric reference electrode membrane 8 comprises a hydrophilic plasticizer and a lipophilic polymer, and the inner reference electrode 3 is made of silver/silver chloride.

Claim 15 (cancelled):

Claim 16 (cancelled):

Claim 17 (currently amended): The electrode as set forth in claim ~~16~~ 12, wherein the hydrophilic polymer is selected from the group consisting of polyvinylpyrrolidone, polyvinyl alcohol, poly (methyl methacrylate), agar, gelatin.

Claim 18 (currently amended): A solid-state reference electrode comprising:

- a) a substrate 10;
- b) an insulating film layer 9 formed on the substrate;
- c) a reference electrode material 11 insulated by the insulating film layer 9; and
- d) a polymeric reference electrode membrane 8 protecting the reference electrode material 11, wherein the polymeric reference electrode membrane comprises (a) one selected from a cellulose based porous polymer and a hydrophilic plasticizer

and (b) a lipophilic polymer, the hydrophilic plasticizer being selected from the group consisting of glycerol, polyethylene glycol, ethylene glycol monomethyl ether, ethylene glycol, formamide and a combination thereof,

wherein the polymeric reference electrode membrane 8 is additionally fixed to a hydrogel layer 12, thereby the reference electrode material 11 is protected by the polymeric reference electrode membrane and the hydrogel layer and is made of silver/silver chloride 19.

Claim 19 (cancelled):

Claim 20 (previously presented): The electrode as set forth in claim 18, wherein the polymeric reference electrode membrane is a mono-layer polymeric reference electrode membrane 13 comprising a hydrophilic plasticizer and a lipophilic polymer, and covers the reference electrode material 11, thereby the reference electrode material 11 is protected by the mono-layer and is made of silver/silver chloride.

Claim 21 (previously presented): The electrode as set forth in claim 20, wherein the mono-layer polymeric reference electrode membrane 13 comprises 20-70 % by weight of a hydrophilic plasticizer saturated with a salt selected from the group consisting of KCl, NaCl, KNO<sub>3</sub> and NH<sub>4</sub>NO<sub>3</sub> and 30-80 % by weight of a lipophilic polymer.

Claim 22 (original): The electrode as set forth in claim 18, wherein the substrate 10 is made of a material selected from the group consisting of alumina-containing ceramics, silicon, poly (vinyl chloride), polyester, polycarbonate and semiconductor materials.

Claim 23 (currently amended): The electrode as set forth in claim ~~19~~ 18, wherein the hydrogel layer 12 is prepared by dissolving a hydrophilic polymer at an amount of 1-15 % by

weight in a 0.01-3.0 M aqueous solution saturated with a salt selected from the group consisting of KCl, NaCl, KNO<sub>3</sub> and NH<sub>4</sub>NO<sub>3</sub>, each of which is similar in mobility.

Claim 24 (original): The electrode as set forth in claim 23, wherein the hydrophilic polymer is selected from the group consisting of polyvinylpyrrolidone, polyvinyl alcohol, poly(methyl methacrylate), agar, gelatin and mixtures thereof.

Claim 25 (previously presented): A potentiometric sensor comprising the solid-state reference electrode of claim 18 and a working electrode comprising ion-selective electrodes.

Claim 26 (previously presented): The reference electrode as set forth in claim 12, wherein the porous polymer is selected from the group consisting of cellulose acetate, cellulose acetate butylate, cellulose triacetate, nitro cellulose and a combination thereof.

Claim 27 (previously presented): The solid-state reference electrode as set forth in claim 18, wherein the porous polymer is selected from the group consisting of cellulose acetate, cellulose acetate butylate, cellulose triacetate, nitro cellulose and a combination thereof.

Claim 28 (new): The reference electrode as set forth in claim 12, wherein the lipophilic polymer is selected from the group consisting of silicone rubber, poly (vinyl chloride), polyurethane, poly (vinyl chloride) carboxylated copolymer, poly (vinyl chloride-co-vinyl acetate-co-vinyl alcohol) and a combination thereof.

Claim 29 (new): The reference electrode as set forth in claim 12, wherein the polymeric reference electrode membrane comprises 5-70 % by weight of the porous polymer and 30-95 % by weight of the lipophilic polymer.

Claim 30 (new): The membrane as set forth in claim 12, wherein the polymeric reference electrode membrane comprises 10-50 % by weight of the porous polymer and 50-90 % by weight of the lipophilic polymer.

Claim 31 (new): The membrane as set forth in claim 12, wherein the polymeric reference electrode membrane comprises 20-70 % by weight of the hydrophilic plasticizer and 30-80 % by weight of the lipophilic polymer.

Claim 32 (new): The membrane as set forth in claim 12, wherein the polymeric reference electrode membrane further contains an adhesion-enhancing material at an amount of 0.001-1.0 % by weight on the total weight of composition.

Claim 33 (new): The reference electrode as set forth in claim 32, wherein the adhesion-enhancing material is a highly reactive silicon compound selected from the group consisting of diluted silicon tetrachloride ( $\text{SiCl}_4$ ), aminopropyltriethoxy silane, N-[3(trimethoxysilyl)propyl]ethylenediamine, N(2-aminoethyl)-3-aminopropyltrimethoxy silane, 3-methacryloxypropyltrimethoxy silane, N-(2-vinylbenzylamino)ethyl)-3-aminopropyl trimethoxysilane, 3-glycidoxypropyltrimethoxy silane, methyltrimethoxy silane and phenyltrimethoxy silane.

Claim 34 (new): The solid-state reference electrode as set forth in claim 18, wherein the lipophilic polymer is selected from the group consisting of silicone rubber, poly (vinyl chloride),

polyurethane, poly (vinyl chloride) carboxylated copolymer, poly (vinyl chloride-co-vinyl acetate-co-vinyl alcohol) and a combination thereof.

Claim 35 (new): The solid-state reference electrode as set forth in claim 18, wherein the polymeric reference electrode membrane comprises 5-70 % by weight of the porous polymer and 30-95 % by weight of the lipophilic polymer.

Claim 36 (new): The solid-state reference electrode as set forth in claim 18, wherein the polymeric reference electrode membrane comprises 10-50 % by weight of the porous polymer and 50-90 % by weight of the lipophilic polymer.

Claim 37 (new): The solid-state reference electrode as set forth in claim 18, wherein the polymeric reference electrode membrane comprises 20-70 % by weight of the hydrophilic plasticizer and 30-80 % by weight of the lipophilic polymer.

Claim 38 (new): The solid-state reference electrode as set forth in claim 18, wherein the polymeric reference electrode membrane further contains an adhesion-enhancing material at an amount of 0.001-1.0 % by weight on the total weight of composition.

Claim 39 (new): The solid-state reference electrode as set forth in claim 38, wherein the adhesion-enhancing material is a highly reactive silicon compound selected from the group consisting of diluted silicon tetrachloride ( $\text{SiCl}_4$ ), aminopropyltriethoxy silane, N-[3(trimethoxysilyl)propyl]ethylenediamine, N(2-aminoethyl)-3-aminopropyltrimethoxy silane, 3-methacryloxypropyltrimethoxy silane, N-(2-vinylbenzylamino)ethyl)-3-aminopropyl

trimethoxysilane, 3-glycidoxypropyltrimethoxy silane,  
methyltrimethoxy silane and phenyltrimethoxy silane.